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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/441,119	11/17/1999	OLIVER L. RICHARDS	ALLEG-017PUS	3874

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DALY, CROWLEY & MOFFORD, LLP
SUITE 101
275 TURNPIKE STREET
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EXAMINER	
RAMAN, USHA	

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/441,119	RICHARDS ET AL.	
	Examiner	Art Unit	
	Usha Raman	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Information Disclosure Statement

1. The information disclosure statement filed 2-14-2000 fails to comply with 37 CFR 1.98 in that copies of the non-patent literature have not been provided. Only the LNPB22 reference has been considered.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: part number 122 mentioned in page 12, line 18 and part number 134 mentioned in page 12 in line 29. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: part number 64 is mistyped as Act tone signal instead of AC tone signal.

   Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 1-3, 7-9 and 11 are rejected under 35 U.S.C. 102(a) as being anticipated by "LNBP22: LNB Supply and Control IC with Step-Up Converter and I2C Interface" Data sheet of ST, pages 1-10, V.3.2 published in December 1998.

In regards to claim 1 LNBP22 data sheet illustrates and describes the schematic of a circuit providing power and control signals selected from a plurality of DC voltage levels being modulated by an analog AC tone signal to the LNB on a single pin. This circuit comprises of a DC-DC switch mode power supply unit (a step up converter), coupled to a linear post-regulator that modulates the DC voltage level by the analog AC tone signal. The switch mode power supply unit provides an output voltage to the linear post regulator (or amplifier) by a pre-determined offset greater than the selected DC voltage, such that the power dissipation across the linear regulator is minimized. Note "Block Diagram and Typical Application Circuit" figure shown in the bottom of page 1 and the first paragraph in page 2 of the LNBP22 data sheet.

In regards to claim 2 the LNBP22 IC is intended for a satellite TV receiver to provide power and tone signal to the LNB down converter in the antenna. Note the description in page 1 of the LNBP22 data sheet.

In regards to claim 3, the LNBP22 has an internal 22KHz oscillator, whose output is coupled to the input of linear post regulator (amplifier). Therefore, the 22KHz generates an analog AC tone signal to the linear post regulator (amplifier). Note the figure on bottom of page 1, lines 5-7 and lines 16-17 in page 2 of the LNBP22 data sheet.

In regards to claim 7, the LNBP22 selects one of plurality of DC voltage levels based on control signals provided. The switch mode power supply provides a regulated output, V_{UP} that has a predetermined voltage level greater than the selected DC voltage level in order to provide a sufficient supply voltage to the linear regulator so it can output the selected DC signal. Note line 14-15 in page 1 and the first four rows of the last table on page 6 of the LNBP22 data sheet. The output voltage regulated by the switch mode power supply goes to the linear regulator which modulates the selected DC voltage level by an analog AC tone signal generated by the built in 22KHz oscillator.

In regards to claim 8, the LNBP22 provides output voltage of the linear post regulator (amplifier) to the low noise block converter in the antenna of a

satellite television system. Note the description in page 1 of the LNBP22 data sheet.

Method claim 9 corresponds to apparatus claim 3 and is analyzed as previously discussed for the above claim.

Claim 11 corresponds to claim 1, with an additional limitation of an AC tone signal generator coupled to the linear amplifier. The AC tone signals of the LNBP22 are generated by a built in 22KHz oscillator, where the appropriate control signal is asserted. Note the figure on bottom of page 1, lines 5-7 and lines 16-17 in page 2 of the LNBP22 data sheet.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

   a. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over "LNBP22: LNB Supply and Control IC with Step-Up Converter and I2C Interface" Data sheet of ST, pages 1-10, V.3.2 published in December 1998.

In regards to claims 4 and 5, the LNBP22 data sheet discloses the use of a DC-DC switch mode power supply in the LNBP22 supply and control voltage regulator for regulating variable DC voltage to the linear amplifier. It however does not disclose the use of a boost converter or a buck converter as the switch mode power supply.

Official notice is taken that the buck converter and the boost converter are well-known types of DC-DC switch mode power supplies in the art at the time the invention was made.

Therefore, it would have been obvious for one of ordinary skill in the art at the time that the invention was made, to use a buck converter or a boost converter for a DC-DC switch mode power supply in order to reduce power consumption of the regulating device and at the same time regulate a variable range of output voltage at constant value to the linear amplifier, in order to minimize the power dissipation across the linear amplifier.

8. Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over "LNBP22: LNB Supply and Control IC with Step-Up Converter and I2C Interface" Data sheet of ST, pages 1-10, V.3.2 published in December 1998 in view of Tsurumaki et al. (US Pat. 5,345,591).

Regarding claim 6, LNBP22 does not disclose the described first and second output ports. Tsurumaki et al. disclose a receiving satellite changeover apparatus unit that is capable of providing supply and control to one of plurality of LNB units. Figure 14 of Tsurumaki et al. discloses multiple output ports (24a-24d).

Therefore, it would have been obvious to modify LNBP22 control and supply regulator, to provide multiple output ports as disclosed by Tsurumaki et al. to connect several LNBs to a single LNB control and supply regulator.

Method of claim 10 corresponds to apparatus claim 6 and is analyzed as previously discussed for the above claim.

9. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over "LNBP22: LNB Supply and Control IC with Step-Up Converter and I2C Interface" Data sheet of ST, pages 1-10, V.3.2 published in December 1998 in view of Mammano et al. (US Pat. 5,422,562).

Regarding claim 12, the LNBP22 data sheet lacks the internal details of the switch mode power supply unit.

Mammano et al. shows a standard mode power supply that comprises (see figure 2 in Mammano et al.):

- An error amp (34), where the first input is coupled to a reference voltage (V_{REF}) and a feedback input that is responsive to the output of the power supply (20),
- A pulse width modulation comparator (16) responsive to the output of the error amp for controlling a transistor (14),
- A transistor (14) where the first input is coupled to the input voltage source (18), the control port is coupled to the PWM comparator (16), and the third terminal is coupled to the inductor (24).
- An inductor (24) where the first terminal is coupled to the third terminal of the transistor (14) and the output of the linear regulator (V_O) is provided at the second terminal.

It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the step up converter in LNBP22 with the switch mode power supply of Mammano et al. in order to provide a power supply with an improved dynamic response as specifically taught by Mammano et al. (see column 1, lines 6-9).

In regards to claim 13, an offset voltage source has been added so that the switch mode power supply can regulate the selected DC voltage level for the LNB plus an offset voltage to power up the linear amplifier. If this offset voltage source was coupled to any other node in the circuit, it would not obtain the desired output voltage characteristics. Consider the following alternatives: if the

offset source was coupled to the second terminal of the inductor or to the input voltage source, the output voltage will have a delayed response or missed response to new DC levels selected based on control signals. If coupled to the output of the error amp, the duty cycle will be incorrect and not supply the required offset to the linear amplifier. Therefore in order to supply a voltage level equal to the selected DC voltage level plus the offset voltage to the linear amplifier, the offset source must be coupled to the reference voltage and the non-inverting terminal of the error amplifier.

The switch mode power supply of LNBP22 necessarily includes the use an offset voltage source because the output voltage, V_{UP} is a predetermined offset greater than the input voltage that corresponds to the selected DC voltage, V_{SELECT} in order to allow the linear regulator to work at a minimum dropout. Note page2, lines 14-15. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention, to couple the offset voltage regulator between the reference voltage and the non-inverting terminal of the error amplifier in the modification of LNBP22 in view of Mammano et al. in order to regulate an output voltage that is equal to the selected DC voltage plus the offset voltage to the linear amplifier, that accurately responds to any change in selected DC voltage levels.

In regards to claim 14, the PWM of Mammano et al. is a current mode PWM. Therefore the modification of LNBP22 in view of Mammano et al. is a current mode PWM as well. Note column 4, lines 10-13.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Usha Raman whose telephone number is (703) 305-0376. The examiner can normally be reached on M-F: 9am -7pm, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Faile can be reached on (703) 305-4380. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

UR

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